

Cliff 6-1

7/8/90

Geologic Log
Cliff 6-1

Core Point 310'

310-310.1 - ~~tuffaceous sandstone~~ Tuff

310.1-315.5 - thinly laminated marlstone (oil shale),
lean grade; color 5Y 5/2
at 312.75 - there is a 0.02' sandstone seam

315.5 - 322.5 thinly laminated lean oil shale, light
olive color 5Y 5/2
Some core missing ~~between~~ between 319.4 and 320.3

322.5 - 323.0 Same as above

323.0 - 325.0 Thinly laminated lean oil shale (5Y 5/2) with
small tuffaceous SS blebs & inclusions

325.0 - 332.0 Thinly laminated lean oil shale (5Y 5/2).
328.3 - 328.35 - thin seam of rich shale

332.0 - 332.5 richer oil shale (olive gray 5Y 4/1)

340' - hit aquifer - meeting about 50 GPM - then tapered off
Nothing in core to indicate water source

Cliff 6-1

(2)

332.5-333.3 — richer oil shale (5Y 4/1)

333.3 — 338.1 — lean, thinly laminated oil shale (5Y 5/2)

338.1 — 338.9 — richer oil shale (darker color, 5Y 4/1)

338.9 — 341.1 — lean, thinly laminated O.S. (5Y 5/2)

341.1 — 342.0 — dark, richer oil shale 5Y 4/1

342.0 — 342.5 — lean oil shale 5Y 5/2

342.5 — 344.9 — lean oil shale 5Y 5/2

344.9 — 346.0 — lean oil shale — lighter color, light olive

gray 5Y 6/1
— ~~shale~~ ^{nodules} at 345.9, nodule diameter 0.04.

346.0 — 348.9 — lean oil shale — lighter color
Light olive gray 5Y 6/1 to pale yellowish brown 10YR 6/2
Lost core in this interval. Has mud seams (soft shale)
and nodules on surfaces — bedded thin seam.

348.9 — 352.5 — thinly laminated shale, darker color but still lean.
Olive gray 5Y 4/1

Cliff 6-1

(3)

352.5-353.2 thinly laminated, olive gray shale (mudstone)

353.2-355.4 thinly laminated, lean oil shale, light olive gray 5Y 5/2

355.4-358.0 richer oil shale, some dk bands between 356 and 357

358.0-358.1 - gray tuff. SS

358.1-359.8 - lean oil shale, pale yellowish brown

359.8-360.9 - Tuffaceous, contorted shale; has some slump structure

360.9 - 362.5 rich oil shale with contorted tuffaceous zones, beds up to 0.2 of tuff; dark tuff zones produce gas. 5Y 3/2

362.5 - 363.0 rich oil shale bed with lenses of contorted tuff (thin) 5Y 3/2

363.0 - 365.1 med grade oil shale, finely laminated 5Y 5/2

365.1 - 365.15 rich oil shale 5Y 3/2

Cliff 6-1

(4)

365.5 - 366.7 - Rich oil shale with tuff seams that have strong oil odor & produce small amt of gas 5Y 3/2

366.7 - 367.5 - med grade shale, oil odor, 5Y 5/2

367.5 - 368.1 - rich oil shale, med. laminated

368.1 - 372.5 - thinly laminated oil shale, med olive brown 5Y 4/4, competent rock

372.5 - 374.2 - Same as above

374.2 - 374.85 - grey tuff zone, contorted; main zone 0.4 of solid tuff - distinct top contact with shale.

MM

374.85 - 378.1 - thinly lamm. oil shale, 5Y 5/2, competent med grade

378.1 - 380.6 - richer oil shale zone 10Y 4/2

380.6 - 381.0 - med grade shale 5Y 5/2

381.0 - 382.5 - dark rich shale (brownish black 5YR 2/1),
w 382.0 - 382.1 - ~~thin~~ thin tuff zone

Cliff 6-1

(5)

382.5-386.0 dark rich oil shale, much of it olive blk (5/2/1)
Some contorted, wavy lamina at 384.0-384.5

(387) - driller lost circulation

386.0-386.6 - dark rich oil shale, olive blk (5/2/1)

386.6-386.8 - Kerogen rich buff, dk brown, came out
of hole as fine rubble, unconsolidated

386.8-387.1 - dk rich oil shale, olive blk (5/2/1)

387.1-387.5 - buff colored, light weight tuff zone

387.5-388 - dk rich oil shale with a tuff
zone from 387.7 to 387.8 (oil rich odor)

388.0-388.3 - dk rich oil shale

388.3-388.7 - oil rich tuff

388.7-389.0 - dk rich shale

Cliff 6-1

(6)

389.0 - 389.3 - lt weight tuff zone - oil impregnated

389.3 - 389.4 - Rich Shale

389.4 - 390.0 - tuff zone - light wt, buff colored,
oil odor.

390.0 - 390.0 - rich oil shale - actually a
one foot zone

Note: 388 - 390 - driller said drilled 2
foot but we got 3.2' of core
though considerable tuff zone
could account for some expansion
but not all.
?

Note - Start of shift - producing 5 GPM artesian -
slow steady flow. - took sample of water.

390.0 - 390.4 - dark rich oil shale

390.4 - 390.7 - dark, reddish brown tuff (partly broken up)

390.7 - 391.05 - dark rich oil shale

Cliff 6-1

(7)

391.05 - 391.4 - dark reddish brown tuff

391.4 - 392.2 - dark, rich oil shale

392.2 - 393.5 - med grade oil shale 10YR 4/2

393.5 - 394.6 - high grade shale 5YR 2/2

394.6 - 395.0 med grade shale 10YR 4/2

395.0 - 395.5 med grade shale 10YR 4/2 Short run
bit problem

7011 Day 7/11/90 ~~med~~

395.5 - 395.8 med grade shale 10YR 4/2

395.8 - 399.8 - high grade shale ~~10YR 4/2~~ 5Y 2/1
tuff at 398.0 - 398.1

399.8 - 400.3 med grade 10YR 4/2

400.3 - 402.0 high grade 5Y 2/1

402.0 - 404.4 med grade shale, finely laminated
light olive gray 5Y 5/2

Cliff 6-1

(8)

404.4 - 406.3 high grade shale, olive blk 5Y 2/1
gas^{bubbled} produced in 3 thin tuff seams between 405.7
and 406.0

406.3 - 410.9 med grade shale
buff tan to grayish tan
10YR 4/2 to 5Y 5/2

410.9 - 412.0 med to high grade shale 5YR 3/4
end of run

412.0 - 417.9 med grade shale, fairly consistent grade
and color 5YR 3/4. 0.05 tuff seams
at 414.3 and 415.8

417.9 - 420.5 med grade shale
buff tan to grayish tan
10YR 4/2 to 5Y 5/2

end of run

420.5 - 422.2 Same as above

422.2 - 423.3 med to high grade shale 10YR 4/2
one 0.05 tuff zone at 423.1

Cliff 6-1

(9)

423.3 - 424.6 grayish tan lower grade shale 5Y 5/2

424.6 - 428.0 thinly laminated, low grade shale
Be groove? (marlstone); light color (yellowish gray 5Y 7/2)

428.0 - 429.2 med grade shale 5Y 4/1 (olive gray)

429.2 - 430.5 grayish tan low grade 5Y 5/2
with tuff zone 430.0 - 430.3. that oozes heavy
oil & gas

end of core

430.5 - 431.5 - same as above 5Y 5/2

431.5 - 432.7 - high grade oil shale, olive gray 5Y 3/2

432.7 - 436.0 - grayish tan low grade shale 5Y 5/2

436.0 - 437.1 - high grade oil shale 5Y 3/2
parting planes obvious 436.5 - 436.8

437.1 - 439.5 - ^{to yellowish gray (5Y 7/2)} tan, low grade shale (marlstone)
Some parting planes - caused drill plugging

Cliff 6-1

(10)

439.5 - 441.0 yellowish gray 5Y 7/2 to lt. olive gray 5Y 5/2
shale

441.0 - 442.4 - med grade oil shale - dk yellowish brown 10YR 4/2

442.4 - 444.6 - massive tuff zone with some
contorted bedding from 442.4 - 442.9
yellowish gray color 5Y 7/2

444.6 - 445.9 med grade oil shale - 10YR 4/2

445.9 - 449.5 lighter shades of shale, low grade
yellowish gray 5Y 7/2 to lt olive gray 5Y 5/2

End of Hole